PATENT
Customer No. 22,852
Attorney Docket No. 05716.0013

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Imtiaz RANGWALLA	)	Group Art Unit: 1794
	)	
Application No.: 10/823,920	)	Examiner: B. Shewareged
	)	
Filed: April 14, 2004	)	
	)	
For: MATERIALS TREATABLE BY PARTICLE BEAM PROCESSING APPARATUS	)	Confirmation No.: 6117

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132 OF IMTIAZ RANGWALLA

I, IMTIAZ RANGWALLA, do hereby declare and state as follows:

1. I am the inventor of the subject matter described and claimed in U.S. Application No. 10/823,920 ("the '920 application"), filed April 14, 2004.

2. I have been employed by Energy Sciences, Inc., from 1986 to the present. I am currently working in the sales and marketing group as a Senior Process Development Engineer, a position that I have held since 2000. My primary responsibilities in my present position include research and development.

3. My qualifications and professional training are as follows:

1979 – B.S., Chemistry, Bombay University, Bombay, India
1984 – B.S., Chemical Engineering, Northeastern University, Boston, MA.
1986 – M.S., Chemical Engineering, Northeastern University, Boston, MA.
1986 - 1992 – Process Engineer, Energy Sciences, Inc.
1993 - 1999 – Project Leader, Energy Sciences, Inc.
2000 - present – Sr. Process Development Engineer, Energy Sciences, Inc.

4. My relevant work experience includes the development of particle beam processing units and the development of layered materials processed by particle beam units. These layered materials are particularly useful for flexible packaging applications.

5. I am personally responsible for the discovery and the development of the layered compositions disclosed and claimed in the '920 application.

6. I have read and understand the disclosure of the '920 application, including pending claims 1-5, 8-12, 18, 20, 22-38, 40, 41 and 44-47.

7. I have read and understand the disclosures of U.S. Patent No. 6,528,127 (hereinafter "Edlein") and U.S. Patent Pub. No. 2003/0001108 to Rangwalla et al., in which I am one of the named co-inventors (hereinafter "Rangwalla), which have been cited by the Office in their rejection of the pending claims of the '920 application under 35 U.S.C §§ 102 and 103.

8. I have been asked to comment specifically on the disclosure of Edlein, and whether or not it would teach or suggest to a skilled artisan, the addition of energy-curable monomers to standard inks for use in layered compositions.

9. In particular, I have been asked to comment on whether the "carrier resins" disclosed in Edlein would qualify as "energy-curable monomers." In my opinion, for the reasons set forth below, the carrier resins discussed in Edlein would not qualify as energy-curable monomers, and Edlein does not teach or suggest otherwise to one skilled in the art.

10. Edlein explains that "typical carrier resins used in standard inks include those which have nitrocellulose, amide, urethane, epoxide, acrylate, and/or ester functionalities. Standard carrier resins include one or more of nitrocellulose, polyamide, polyurethane, ethyl cellulose, cellulose acetate propionate, (meth)acrylates, poly(vinyl butyral), poly(vinyl acetate), poly(vinyl chloride) and the like." *Edlein*, col. 9, ll. 61-67. These exemplary nitrocellulose, polyamide, polyurethane, ethyl cellulose, cellulose acetate propionate, poly(vinyl butyral), poly(vinyl acetate), and poly(vinyl chloride) carriers listed in column 9 of Edlein are well-known resin polymers commonly added to standard solvent-based inks. They are not monomeric.

11. The terms "acrylate," "epoxide," "ester" and "(meth)acrylate" are commonly used to generically identify either chemically-reactive monomers or polymeric products derived therefrom, and in the context used in Edlein, as carrier resins in ink, they are clearly used in the polymeric sense.

12. A person of ordinary skill in the art would clearly recognize that terms such as "acrylate," "epoxide," "ester" and "(meth)acrylate," by themselves, do not clearly identify a specific monomer or polymer.

13. However, as noted above, based on the context in which those terms are used and defined in Edlein, it is my opinion that the patentees are referring specifically to inert carrier resin polymers.

14. The patentees of Edlein expressly state that the "solvent-based inks" of their invention include a pigment "dispersed in a polymeric carrier which, in turn, is solvated in a liquid medium." *Id.* at col. 3, ll. 31-34 (emphasis added).

15. Edlein's characterization of the ink carriers as "polymeric" comports with the common chemical makeup of traditional carriers typically added to solvent-based ink formulations. Traditional resin carriers are polymeric and added to solvent-based inks to impart strength and facilitate solvent uptake.

16. Accordingly, based on their explicit characterization of the solvent-based inks, coupled with the ordinary and customary use of typical carrier resins, it is my opinion that the patentees are specifically referring to inert, polymeric carrier resins in Edlein. I am aware of no evidence to the contrary, and the Patent Office examiner in charge of this application has not provided any such evidence to the contrary.

17. My opinion is further supported by the Edlein's discussion regarding the exclusion of monomers from the solvent-based inks discussed in Edlein. *Id.*

at col. 10, ll. 2-5. According to Edlein, nitrocellulose/polyurethane resin blends are "preferred in the present invention because it can resist the penetration of monomers and/or oligomers existing in the overcoat." *Id.* (emphasis added).

18. Thus, Edlein clearly wishes to "isolate" monomeric components to the overcoat layer and therefore exclude them from the ink. In view Edlein, one skilled in the art would not seek to add monomers to the ink formulation. Rather, they would avoid it.

19. Further, although Edlein arguably discloses layered materials that comprise polymers in both the ink and overcoat layers, these components will not exhibit bonding between each other.

20. A person of ordinary skill in the art would recognize that exposing the layered materials disclosed in Edlein to ionizing radiation would merely result in the polymerization of the energy-curable monomers in the overcoat. Any inert carrier polymers present in the ink, such as those disclosed in Edlein, would remain unaffected by this radiation exposure.

21. My opinion is further evidenced by Edlein's statements in the specification. For example, Edlein states that "[o]nce the overcoat is applied, the printed film is exposed to ionizing radiation. This polymerizes and/or crosslinks the materials in the overcoat, thus providing a hardened "shell" over the underlying printed markings." *Edlein,* col. 11, ll. 51-54 (emphasis added). In my opinion, this teaches that polymerization/bonding is limited to the

components of the overcoat layer and not, as suggested by the examiner, between the layers. Thus, the resulting polymers in the overcoat and the polymeric carriers of the ink would not exhibit bonding between each other.

I further declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true, and understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001).

Imtiaz Rangwalla

4/9/08
April 9, 2008